

The prototype board kit is designed to allow easy prototype development and experimentation with both the Flowlog and the version 2 PICmicro development board.



Facilitates project work for those using the PICmicro development board

The kit will require modest soldering skills to assemble. Only side cutters, a soldering iron, and solder are required.

Four independent switches and LEDs (with current limiting resistors) are included for project work and all connections to the Flowlog and version 2 PICmicro development board are available to users via on-board sockets. A selection of coloured wires is also included.

- Facilitates project work with Flowlog
- Facilitates project work for PICmicro development board
- All parts included
- Selection of coloured wires included



Facilitates project work for those using the Flowlog

Special features for PICmicro development board users

The prototype board kit connects to the Version 2 PICmicro development board via a 40 pin header: this gives access to all of the pins on the PICmicro on the development board and even allows you to put a PICmicro on the prototype board and program it in-situ. This allows you to develop prototypes that can operate independently from the PICmicro development board. See below for details.

Users who want to use the PICmicro development board on the Flowlog at the same time will require a parallel port switch.

Prototype board manual

Caution:

This product is not a toy, and should be kept away from small children due to small parts and sharp corners. Soldering is a hazardous activity, and should be carried out under adult supervision in a well-ventilated room.

Positioning elements:

The general direction of the writing can be used to determine top, left, bottom and right for the board. For example the text "Prototype board" is in the top left hand corner.

Assembly:

1. Fit the 5 off 3 way terminal block into T1 with the connectors facing left, away from the centre of the board. The terminals link together and it may be easier to link them all up before insertion and insert them as a group.
2. Fit one of the 20 pin SIL connectors into J1, fit one into J5, and fit the remaining two into J2
3. Fit the 40 pin header block into J3
4. Fit the four switches into S1 to S4. The switches need to be inserted with the legs facing the top and bottom of the board.
5. Fit the four 560 Ohm resistors into R1 to R4
6. Fit the four LEDs into D1 to D4. The Cathode (the flat part of the LED) needs to face the top of the board
7. Remove the sticky label from the prototype board and place it in the correct position on the printed circuit board. Be careful when positioning the board as it will be difficult to remove once you have stuck it down.

Circuit details

The terminal block T1 is designed to be connected to the Matrix Multimedia Flowlog device. Flowlog can be used in conjunction with the prototype board for experiments in electronics and for construction of your own circuits. The terminals on the Prototype board are designed to line up with the terminals on the Flowlog to make connection easier. Your prototype board kit should contain a short piece of multistrand wire: if you are connecting the prototype board to the Flowlog then you will need to strip each connection on each end and use the screw terminal blocks to make a semi-permanent connection to the Flowlog.

The bottom 15 connections on J1 correspond to the connections on T1. The other 5 connections at the top of J1 serve as additional +V voltage points for the prototype board. The +V output from the Flowlog is actually 5V and will supply up to 500mA of current. This power supply will be enough for most of your prototyping needs.

The pin block J2 corresponds exactly to the header block J3.

The Header block J3 is designed to connect the prototype board with the Matrix Multimedia PICmicro development board. Note that the text "J3" corresponds position wise to the "J5" at the 'top' of the header block on the PICmicro development board. Care must be taken when connecting the cable as incorrect positioning can result in the pins being reversed and damage to your PICmicro.

The switches and the LEDs are connected to a single pin block J5.

The first eight pins are the connections for the four switches. The last eight pins are for the connections for the four LEDs. The remaining 4 pins are not used.

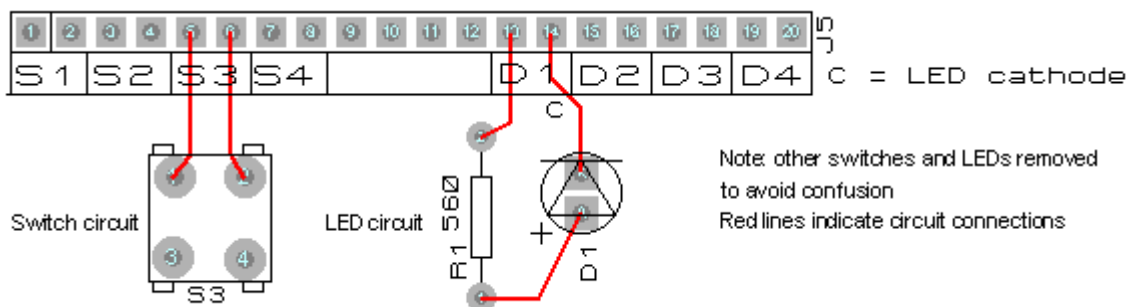


Fig 1. Switch_LED_Circuit.bmp

Switches have two pins associated with them. Switches do not need any special considerations when wiring them up. The switch circuit is shown in Fig 1.

LEDs have two pins associated with them. One of the pins has a small 'c' next to it. This marks the cathode pin of the LED circuit. The LED circuit is fitted with a current limiting resistor between the anode of the LED and the pin. The LED circuit is shown in Fig 1.

Programming PICmicro devices on your prototype board.

It is possible to program a PICmicro microcontroller whilst the device is on the prototype board. This allows you to create a circuit on the prototype board, and program or update the PICmicro without having to remove it from the circuit. You can then take the whole prototype board away to where it is needed for testing etc.

Caution

- You should always disconnect the power supply whilst fitting or removing the chip.
- You should follow anti-static procedures, as static can damage a chip.
- When programming PICmicros you will need to place the chip over the central divide so that each pin is on a separate track. Having different pins on the same track may damage the PICmicro.

Programming a PICmicro microcontroller requires the following connections to be made to the PICmicro:

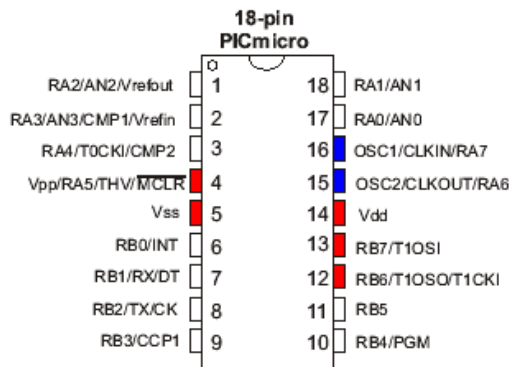
- | | | |
|------------|----------------------------------------|---------------------------|
| • Vpp/MCLR | - The Master Clear and +V connection. | +V on the board |
| • RB7 | - Programming data input/output signal | B7 on the board |
| • RB6 | - Programming clock signal | B6 on the board |
| • Vss | - PICmicro power supply rail | Use the bottom row Vs pin |
| • Vdd | - PICmicro power supply rail | Use the bottom row Vd pin |

During programming the pins B6 and B7 are used to program the PICmicro. The pins revert back to being a normal part of the port when not in program mode.

Note that for PICmicro devices that have only one Vs connection and/or only one Vd connection you will need to use the pins located on the bottom row of J2 – see layout image below.

Depending on the device you are using you may also need to add a clock circuit using pins OSC1 and OSC2. You can select clock options from the PPP utility supplied with the development board. Please refer to PICmicro datasheet for clock circuits.

The connections required will be on different pins on different PICmicro types. The diagram below refers to an 18-pin PICmicro, such as the PIC16F84A. Details of pin layout for other PICmicros can be found in the relevant literature and datasheets. The connections required are shown in red, and the optional clock type configuration connections are shown in blue.



Parts list

- | | |
|---|---------------------------------|
| 1 | PCB |
| 1 | Prototype board |
| 4 | 20 way PCB terminals |
| 4 | Push to make switches |
| 4 | LEDs |
| 4 | 560 ohm resistors |
| 5 | 3 way screw terminal connectors |
| 1 | 40 way dual inline connector |
| 1 | 15 way Flowlog cable |
| 1 | pack multicoloured wire |
| 4 | sticky feet |

The cable to connect to the PICmicro development board consists of:

- | | |
|---|------------------------|
| 1 | 30 cm 40 way IDC cable |
| 2 | 40 way IDC connectors |

This is available as a separate part: part number HPBCAB.

